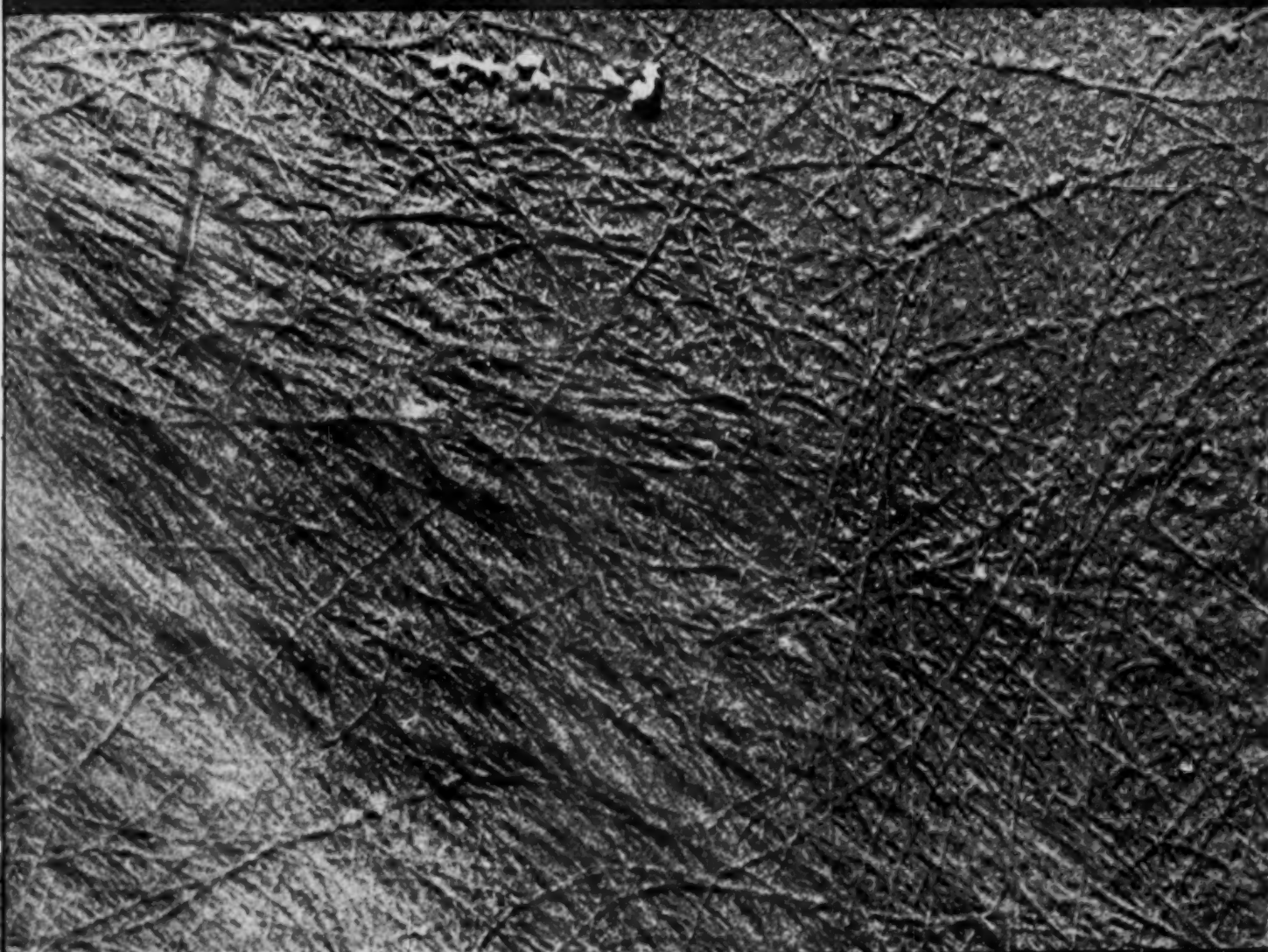


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March 29, 1952

# SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



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## ARCHAEOLOGY

# 11,000-Year-Old Weapons

**Mexican finds complete chain linking ancient man with his weapons and with the now long extinct animals he hunted with them.**

► THE WEAPONS with which the earliest Mexican, 11,000-year-old Tepexpan Man, hunted elephants now long extinct have just been found in Mexico.

Two arrow heads, a knife, and a scraper chipped from green volcanic glass by the hand of this ancestor of American Indians were found buried with the fossil bones of a mammoth close to where the bones of Tepexpan Man himself were discovered about five years ago.

Significance of the new discovery, according to Dr. Helmut de Terra, discoverer of Tepexpan Man, is that now for the first time at the same site, man-made tools have been found with extinct elephants and also human bones. Thus the chain is complete linking ancient man with his weapons and the long extinct animals he hunted.

The important little green obsidian weapons and mammoth bones were dug up in the dried bed of the lake on which

Mexico City was built. Many other fossil elephant bones have been "mined" at this same site. Evidently many centuries ago a herd of the animals was driven or charged into the lake and became stuck in the mud and, thus trapped, died or were killed there.

Tepexpan Man has been judged to be over 11,000 years old by the radiocarbon dating of the peat layers in which the bones were found. This provides an approximate date for the mammoth bones and weapons found in the same geological location.

The new finds were made by a party of scientists representing the National Museum of Mexico and the University of Denver. Members of the party were: Prof. Pablo Martinez del Rio of the University of Mexico, Dr. Manuel Maldonado-Koerdel and Luis Aveleyra Arroyo de Anda from Mexico's Museum and Dr. Marie Louise Wormington of the University of Denver.

*Science News Letter, March 29, 1952*

## PHYSIOLOGY

# Live Animals Rocketed

► LIVING ANIMALS have, for the first time, been studied in a weightless condition.

This was revealed at a session on "space medicine" of the Aero Medical Association in Washington.

Drs. J. P. Henry and E. R. Ballinger, of the Aero Medical Laboratory at Wright-Patterson Field, Dayton, Ohio, told how five primates, probably monkeys, under anesthesia fell freely in V-2 and Aerobee rockets, achieving the weightless state for periods of from two to three minutes.

Their reactions while free from the force of gravity were telemetered down to the ground. It was found that, in this short period, no significant change took place in the heart and blood vessel system. If the findings can be applied to man, there is some hope that the gravity-free state he will find in space travel will not be as harmful as was heretofore believed.

The two doctors, who did the work along with Drs. P. J. Maher and D. Simons, also studied photographic records of mice who had been through two to three minutes of subgravity.

"As long as foothold was available to the animals," they reported, "they did not appear seriously disturbed. They ran and jumped normally immediately following resumption of an orienting gravity stress."

The scientists concluded that "the subgravity state will not lead to any serious psycho-physiological difficulties."

There were hints at the meeting that the weightless state had been achieved on the ground, without the necessity of a free-falling rocket. However, sources suggested, information about this achievement is classified.

*Science News Letter, March 29, 1952*

## MEDICINE

# Chemical Injections Prevent Kidney Stone Formation

► EIGHTEEN OUT of 20 patients have been kept free from kidney stones over a period of 11 to 15 months by treatment with an enzyme chemical, Dr. Arthur J. Butt of Pensacola, Fla., and Dr. Ernst A. Hauser of Massachusetts Institute of Technology have announced.

The enzyme chemical is hyaluronidase. It is given by injections under the skin. The patients treated all had a tendency to rapid kidney stone formation.

Jelly-like chemicals called colloids normally protect against kidney stone formation these scientists have found. Hyaluronidase causes a pronounced increase in urinary

colloids and therefore prevents kidney stone formation.

The importance of colloids in relation to kidney stone formation was announced by Drs. Butt and Hauser at an American Chemical Society meeting (SNL, June 30, 1951, p. 402). At that time, "encouraging results" were reported for the enzyme treatment. The continuing good results are reported to fellow scientists in the journal *SCIENCE* (March 21).

Discovery of the action of protective colloids, the scientists state, may "open up a new and hitherto neglected field for medical science far beyond the treatment for kidney stones." Their statement is based on findings that formation of protective colloids virtually disappears during times of strong emotional stress.

*Science News Letter, March 29, 1952*

## BOTANY

# Photosynthesis Material Concentrated in Algae

► THE MATERIALS that capture the sunlight's energy in the blue-green algae are concentrated in particles within the living cells, very much as they are in other green plants.

This step toward understanding the mystery of photosynthesis was announced to the scientific world through a letter to the editor of the journal *NATURE* (March 15) written by Drs. M. Calvin and V. Lynch of the University of California, Berkeley, known for their researches on photosynthesis.

Heretofore it was thought that the energy-capturing pigments, called chlorophyll and carotenoids, were uniformly distributed throughout the whole cell. Smashing the cells with ultrasonics, nitrous oxide treatment and alumina grinding, Drs. Calvin and Lynch separated the materials by centrifuging, showing that these two pigments are in the particles and that phycocyanin, another pigment, is in the solution.

Bacteria that can perform photosynthesis also have their pigments aggregated, experiments of other scientists have shown.

*Science News Letter, March 29, 1952*

## TECHNOLOGY

# Electric Plane Circuits Checked Automatically

► FUTURE AIR catastrophes may be reduced by an electric circuit checker.

Known as the Nacelle Tester, the instrument is capable of giving 200 airplane electric circuits the once-over in less than 10 seconds. Hand testing the same number would require hours, reported John A. Herbst, Bogue Electric Manufacturing Co., Paterson, N. J. The instrument checks electric wiring to the propellers, carburetor and other vital parts of airplanes.

*Science News Letter, March 29, 1952*



## ASTRONOMY

# Tons of Meteor Dust Daily

Micro-meteors, so tiny they do not burn, rain constantly upon the earth. Pitting of rockets shot high into upper atmosphere show their presence.

► MILLIONS OF meteors so small they are never heated enough to blaze across the sky as even faint "shooting stars" each day enter our atmosphere.

These meteors are so tiny that although our atmosphere slows them down as it does larger "falling stars," it never heats them above their melting point, Dr. Fred L. Whipple of Harvard College Observatory, Cambridge, Mass., reports. Being so small, they can radiate away the frictional heat fast enough to avoid boiling away.

Fully 1,000 tons of this dust from outside our atmosphere rain down upon the earth each day, Dr. Whipple estimates. Every day or two one of these particles usually falls on each square inch of earth.

Some of these micro-meteors were undoubtedly torn loose from larger meteors as they flashed through the air. But most of them are believed to be cosmic bits scooped up by the earth's atmosphere as it speeds through space.

These micro-meteors are so tiny they would easily escape notice. You would have to lay about 40 of them end to end to get the thickness of a blond hair or piece of newspaper.

They are slowed down in their flight through our atmosphere 65 to 80 miles above the earth, but they radiate away the heat of friction too fast to shine in the sky. Thus they drift down to earth undamaged, tons of them each day.

The presence of these numerous little, unshining meteors is betrayed by rockets shot high into our upper air. The rocket's polished surface is always pitted when it returns to earth, states T. R. Burnight of the U. S. Naval Research Laboratory. Rockets that have been in the upper air only a few minutes show small craters on their polished surfaces.

Micro-meteors striking the nose of a V-2 rocket hit it with enough force for the noise to be recorded with high-frequency radio equipment. Drs. J. Lloyd Bohn and F. H. Nadig of Temple University, working under contract with the U. S. Air Material Command, calculate from recordings of the noise that these baby meteors bump into the nose of a rocket every 2.2 seconds on an average.

From the ocean comes additional evidence that these cosmic bits are straying into our atmosphere daily. The nickel content of deposits on the bottom of the deep sea is much greater than would be expected from the general composition of the earth, Drs.

Hans Pettersson and Henri Rotschi of Sweden's Oceanografiska Institutet have discovered.

"Several thousand tons per day" of meteor material must enter the earth's atmosphere each day for so much nickel-containing sediment to fall into the deep waters of the Atlantic and Pacific Oceans, they reason.

These estimates based on ocean sediment agree remarkably well with the calculations of Dr. H. C. van de Hulst of Leiden Observatory, the Netherlands, and Dr. C. W. Allen of Australia. They were the first to demonstrate theoretically the nature of the numerous small particles that swarm around the sun near the plane of the path that the earth follows in its yearly route about the sun.

The nearness of these tiny dust particles to the plane of the earth's orbit was signaled by the scattered sunlight observed during an eclipse and the soft, faint triangle of light, called zodiacal light, sometimes seen in the sky on spring evenings and autumn mornings.

Pilots flying high in our atmosphere have noticed that the daylight sky is bluer than would normally be expected when one rises

above the dust of the lower air. Dr. D. M. Parker and C. Lock of the Naval Research Laboratory in particular have noted the excessive scattering of the daylight sky. Micro-meteorites may well cause it.

Science News Letter, March 29, 1952

## MEDICINE

## Gold in Body to Remain After Cancer Is Destroyed

► CANCER PATIENTS in the future may be walking around carrying gold pieces in their bodies instead of cancers.

The gold pieces will be small, about the size of seeds. They will be the remains of "hot" gold that destroyed the cancers through its radioactivity.

This future prospect, and so far it is still in the future, is foreseen from research by Dr. William G. Myers of Ohio State University, Columbus, and two Naval officers, Lieut. Benjamin H. Colmery, Jr., and Comdr. W. L. McLellon who worked at the university under a radiological defense program.

These scientists found that radioactive gold-198 could be made into "seeds" which, in mice, will actually destroy cancer cells. The "hot" gold is in the form of a fine wire. It is inserted into thin gold tubing. Then bits of any desired size can be pinched off. These little pieces of gold can be left in the body permanently, because radioactive gold-198 has a half-life of only 2.7 days. Until now, radon seeds have been the only radioactive sources which could be used for permanent insertion in cancer.

Science News Letter, March 29, 1952



**FIRST TURBINE HELICOPTER**—The world's first turbo-rotor helicopter is shown on its initial flight. It is a Kaman Aircraft K-225 helicopter powered with a Boeing gas turbine. Marked increases in the plane's performance, because of weight savings, are predicted.

## PHYSICS

# Quick Radioactivity Data

Scintillation probe developed to locate underground beds of radioactive ores more precisely. Ten times more efficient than Geiger instruments in reporting gamma rays.

► AN INSTRUMENT has been developed which detects underground radioactive ore, its quantity and quality, more quickly and more efficiently than comparable Geiger instruments, the Atomic Energy Commission announced in New York.

Called the scintillation probe, the instrument is a steel cylinder two and one-half feet long by two inches in diameter. It contains a detecting element sensitive to gamma rays and it can be lowered into drill holes at least 200 feet deep.

In practice, the scintillation probe has demonstrated many advantages over similar Geiger instruments. It is about 10 times more efficient in reporting gamma rays which strike its detecting element.

Also, it can locate the underground beds of radioactive ores between two and three times more precisely.

Furthermore, it can log drill holes (chart the radioactivity along the entire length of the hole) from five to 20 times more rapidly than Geiger tubes of the same statistical accuracy.

It can discriminate between gamma rays of different energies. That is highly important in determining whether the rays come from uranium or other radioactive materials. And that, in turn, helps determine ore reserves in the area.

It is more versatile than similar Geiger tubes. A single scintillation probe can measure radiation of different intensities whereas several Geiger tubes of different sensitivities would have to be used to obtain that same information.

Basically, the new instrument consists of a light-tight cylinder containing crystals of

sodium iodide near a photomultiplier tube. When gamma rays strike the chemical, their energy is converted to visible light which is detected by the photomultiplier tube. The output of the photo tube is amplified and sent to the earth's surface by a cable where it is pen-recorded on a moving sheet of paper.

The whole outfit is carried in a vehicle equipped with a reel capable of pulling the instrument out of drill holes at a fixed speed. Pen records made by the instrument have been found to agree satisfactorily with laboratory analyses of cores taken from the respective drill holes.

Dr. Phillip L. Merritt, who heads the AEC's exploration program, said he thought the new instrument would speed up the finding of underground deposits of uranium in the Colorado Plateau and in other western states.

Science News Letter, March 29, 1952

## MEDICINE

## Safer Blood Transfusions With Antihistamine Added

► SOME REACTIONS to blood transfusions may be prevented if an antihistamine drug is added to the whole blood before it is transfused. This suggestion comes from a study made at George Washington University Hospital, Washington, by Drs. Harry E. Ferris, Seymour Alpert and Charles Coakley.

The kinds of reactions that could be prevented are allergic, such as hives, and attacks of asthma or breathing difficulty.

Feverish reactions were also reduced when the antihistamine-treated blood was transfused, the doctors report.

Idea for using the antihistamine came from a theory of earlier investigators that susceptibility to allergies in patients receiving blood transfusions was caused by an increase in histamine brought about by the influx of new blood.

Pyribenzamine was the antihistamine used in the experiments at George Washington. Details are reported to fellow physicians in the journal *AMERICAN PRACTITIONER AND DIGEST OF TREATMENT*.

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# Question Box

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In what way are melting snows dangerous to houses? p. 200.

## ASTRONOMY

Why is it important that the edge of the moon be accurately mapped? p. 199.

When will Mars make its closest approach to the earth during 1952? p. 202.

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How will printed "wires" simplify the manufacture of television receivers? p. 203.

## MEDICINE

What malaria preventive will be tested on Korean veterans this summer? p. 201.

What chemicals have been found to be cancer-causing? p. 198.

## PUBLIC HEALTH

# Methods to Stop Rabies

**First sign of dread disease is a change in dog's disposition. Vaccine that gives two years' protection to dogs now developed.**

► A CRY of "mad fox" has replaced the cry of "mad dog" that comes each summer during the so-called dog days. But scientists have long known and taught that rabies is a year round disease and that spring is the season when it occurs most frequently.

Rabies, also sometimes called hydrophobia, meaning fear of water, is caused by a virus which is in the saliva of the rabid, or "mad," dog. When the dog bites a human or another dog, the saliva plus the rabies virus gets into the wound. The virus travels along the nerves to the spinal cord and brain and back along other nerves to the salivary glands, where it gets into the saliva and is ready to attack another victim.

By the time a dog with rabies has reached the stage where he is frothing at the mouth, running crazily about, snapping aimlessly yet viciously at anyone and anything that comes in his way, his appearance and actions will rouse the cry of "mad dog," and warn most people away. Meanwhile, however, before these clear symptoms of rabies have appeared, he may have bitten other dogs and people and given them his frightful sickness. It is vitally important, therefore, that rabies in a dog be recognized at the very earliest possible moment.

The first sign of rabies in a dog is a change in his disposition. He may have a troubled, distracted look in his eyes. He seems to lose his normal desire to recognize and be friendly with other dogs or with people. Dogs which have previously been somewhat aloof may, on the other hand, become unusually friendly, affectionate and gentle.

If you are a dog owner or if you have made friends with dogs in your neighborhood or along your way to work or school, you should know these early symptoms of rabies, both for your own protection and so that you can make sure your dog pet or friend does not become responsible for giving this horrible disease to other dogs or people.

Rabies could be eradicated from the United States, health authorities believe. The methods would be: 1. impounding and destroying of all stray dogs; 2. anti-rabies vaccination of all dogs; 3. registration or licensing of all dogs, which could be combined with the vaccination each year; 4. adequate trapping of foxes or other wild animals, in cooperation with wildlife conservation authorities, when rabies breaks out among these animals.

Strict quarantine on all dogs when there

is a rabies outbreak in a community is also advised.

A vaccine that will protect dogs for two years and probably longer, maybe even for life, has been developed. Tests with it to see how long it will protect are still under way. Research scientists are also working on an anti-serum to be used either with or in place of the classic Pasteur vaccine treatment for a person or dog bitten by a rabid animal. Present disadvantages of the vaccine treatment of humans are the need for 14 to 21 injections and the sometimes serious reactions to it.

Science News Letter, March 29, 1952

## MEDICINE

## Chemical Treats Arthritis With Fewer Harmful Effects

► A REMEDY even better than cortisone for treatment of arthritis exists in a chemical called free Compound F. Like cortisone, Compound F is a hormone from the adrenal



**PILOT EJECTOR**—The pilot's seat belt is automatically unfastened five seconds after he and the seat are ejected from a fast plane. Here the belt unfastener is demonstrated.

glands. It was discovered more than 20 years ago, but has been in such short supply that trials of it could not be made until recently, when methods of producing more of this drug were developed.

Tests of this drug in 15 patients show that it may be 50% more potent than cortisone in relieving arthritis and that it may have less tendency than cortisone to produce undesirable side effects. In some cases, the toxic effects of cortisone disappeared when free Compound F was given.

These tests are reported by Drs. Edward W. Boland and Nathan E. Headley of Los Angeles in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (March 22).

Science News Letter, March 29, 1952

## METALLURGY

## Hard Metals Shaped Without Cutting Tool

► EXTREMELY HARD metals which create problems in the machine shop now can be shaped more easily by an electro-mechanical process which tears particles from the workpiece without the use of a cutting tool.

M. F. Judkins of the Firth Sterling Steel & Carbide Corp., McKeesport, Pa., reported to the American Society of Tool Engineers meeting in Chicago that accuracies up to one-thousandth of an inch could be obtained with the new process. Holes can be drilled and threaded by the same method, he said.

Actually, electrodes which produce powerful electrical forces do the work. Mr. Judkins predicted cutting rates of several inches a minute could be obtained eventually with the new process.

Science News Letter, March 29, 1952

## AERONAUTICS

## Jet Pilot Ejection Now Fully Automatic

► EJECTING A pilot from a faster-than-sound flying jet plane in trouble will soon be fully automatic. Latest addition to the ejection method is an automatic safety-belt unfastener which operates five seconds after the pilot and his seat have been shot 60 feet out of the plane.

The new feature was demonstrated at the meeting of the Aero Medical Society in Washington by the Aero Medical Equipment Laboratory of the Naval Air Material Center, Philadelphia.

When the pilot and his seat are shot out of the plane, a cord attached to the floor is pulled. This sets off a small charge of powder with a five-second burning time. When the powder explodes, it automatically opens the belt. To be ejected from the plane, freed of his seat and in a position for the parachute to open at the required altitude, all the pilot has to do is pull a protective curtain down over his face. This starts the whole operation.

Science News Letter, March 29, 1952



## MEDICINE

# Facts About Cancer

One of the greatest fights the world has ever seen is being waged by medical science against cancer, still a deadly enemy of human beings.

(First of a series of five articles on what can be done about cancer.)

By JANE STAFFORD

► **CANCER IS** a frightening and a sorrowful word to millions.

The word itself comes from the Latin for crab, and a mean old crab it is. Fear, sadness and name-calling, however, cannot stop cancer. Action based on knowledge is needed for that.

Scientists are still searching for more knowledge with which to attack and stop this frightening killer. Meanwhile some things are known which can help all of us to hold the line against cancer.

Many people think of cancer as "a growth." It is more accurate to think of it not just as one growth, but as abnormal growth. Normally, millions of cells in the body die and are replaced every day. Cancer often begins in a disorderly replacement of worn-out cells. The normal replacement of worn-out cells is orderly. Even in cases of injury, when cells are damaged and destroyed, regrowth of the tissue is orderly. When, for example, the skin is cut, new skin cells grow until the cut is healed. Then, normally, the growth of new skin cells is slowed down again to the pace needed for replacing skin cells as they wear out normally.

Cancer cells, once they start growing, do not stop. And they grow without the organization or differentiation that normally controls growing cells so that, from the fertilized egg, cells for different organs and parts of the body develop.

Cancer, if unchecked, kills, and before it kills, it causes sickness. So it is often called a disease. Scientists, however, look on it as a group of diseases with one general characteristic. This characteristic is the multiplication of diseased cells within the body and the invasion by these cells of normal tissue.

Cancer invades not only surrounding tissue. It also gives rise to secondary abnormal growth spots in other parts of the body. This is called metastasis. This spread may be via blood vessels to any part of the body or via lymph vessels to lymph nodes, familiarly called glands, which drain the region in which the cancer is situated.

The primary cause of cancer is unknown, just as the prime factor which supervises the orderly growth and organization of normal cells is unknown. But some secondary causes are known and many others are suspected. For example, although scientists

do not know why cancer of the skin ever occurs, they do know that long exposure to sunlight over a long period of time will cause skin cancer in some persons, particularly light-skinned persons who do not tan easily.

The modern scientific view of the cause of cancer is that there are many causes and probably cancer results from the interplay of more than one.

Viruses are known to cause certain cancers in chickens, rabbits, frogs, and mice. Some scientists suspect a virus cause for some cancers in man. But human cancer is not considered contagious in the manner of virus-caused diseases, such as influenza.

Some chemicals can cause cancer. A hydrocarbon in coal soot has been implicated as the cause of cancer in chimney sweeps. Luminous watch dial painters got cancer from the radium paint they swallowed as they pointed their brushes. Aniline dyes have caused cancer of the bladder in workers in dye plants. Cancer of the lung in chromate workers and cancer of the skin in asphalt workers are other examples of chemicals that can cause cancer.

Cancer is not caused by injuries, but conditions of long-continued chronic irritation are believed to predispose to it. Irritation of the lip by the heated stem of the pipe, for example, may over the years lead to lip cancer. Friction from a belt, suspenders or brassiere strap on a pigmented mole may lead to the kind of cancer called melanoma.

Scientists do not believe cancer is inherited in the way blue eyes are inherited. But there seems to be a hereditary basis for some kinds of cancer. This point has long been and continues to be the subject of intense scientific investigation. Human beings live in a complex environment, eating many kinds of diet, using and working with many kinds of chemicals and subject to many kinds of stresses. And they seldom mate with relatives closer than cousins. So it is very difficult to sort out the possible effects of inheritance and environment and put the finger on any one factor in heredity or environment as a cause of cancer.

Hormones, chemicals produced by glands of the body, seem to be involved in development of at least some kinds of cancer.

Because cancer is a condition of abnormal growth of cells, scientists are delving into the inmost part of the cell, its nucleus, seeking to find what happens there when there is long exposure to chronic irritation, to sunlight or radiation from X-rays and

radium, to chemicals or to unbalanced amounts of hormones.

Scientists have already discovered that some chemical operations of the cancer cell nucleus are different from those in the nucleus of a normal cell. The reason has been traced to enzyme chemicals. Further studies along this line are expected to show much more about the cause of cancer and, perhaps, better ways of controlling cancer.

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**Next Week: Detection Important Part of Cancer Fighting.**

## MEDICINE

## Cancer Increases 30% In Decade in Pittsburgh

► **RECENT CANCER** news: National Cancer Institute statisticians find that cancer among residents of the Pittsburgh area apparently increased 30% from 1937 to 1947. Greatest increase was for cancer of the bronchus and lung, which almost doubled in the 10-year period. But cancer patients in this area were getting more hospital attention in 1947 than 1937, which suggests they are getting better medical attention.

The blocking effect of one cancer-causing chemical by another may be due to changes in the adrenal gland, research by Dr. Howard L. Richardson at the University of Oregon suggests. Reporting the findings, the American Cancer Society, which supported the research, says they may help explain why some chemicals will bring temporary relief and even occasional transient shrinkage of cancers in some patients.

A chemical called lathosterol, which may be the key to a new class of cancer-causing compounds, has been discovered in search for a better means of synthesizing cortisone, famous arthritis remedy. This was reported by Dr. Louis F. Fieser of Harvard University at a meeting at City College in New York.

Three of the compounds which help keep livers healthy, all of them enzymes which control the transfer of methyl groups from one substance to another in body chemical reactions, have been identified and partially purified by Dr. Giulio L. Cantoni of Western Reserve University School of Medicine, Cleveland. The research is announced by the American Cancer Society.

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## INVENTION

## Piggy Bank Is Also Phonograph Record

► **NOW THE** piggy bank talks and sings. John J. Byrne, New York, has invented a flat, thin, round bank, the top and bottom of which are phonograph records. The money is kept in between. The bank can be played on any record player. He received patent number 2,588,958.

Science News Letter, March 29, 1952



**OPERATION FLARE**—A rapid method for control surveys to supply basic data for mapping and field artillery fire control using airborne stations, equipped with signal lights and flares, has been worked out by the Engineer Research and Development Laboratories at Fort Belvoir, Va. Spotted at known and unknown points, simultaneous readings of the target's horizontal angle are taken with theodolites, equipped with recording cameras.

## ASTRONOMY

## Map Edge of Moon

► THE EDGE of the moon that on clear nights you often see outlined against a background of dark blue sky and pin-point stars is being carefully mapped, C. B. Watts of the U. S. Naval Observatory has reported.

Little is known about the moon's edge. The survey is considered important not because adventuresome tourists may some day plan to rocket their way to the moon, but because travelers here on earth need more exact maps. Variations in the moon's edge are now being used in surveying large areas such as deserts and oceans. They are also valuable in detecting slight changes in the earth's rotation and will improve our time determinations.

The moon takes about as long to travel around the earth as it does to turn around its own axis. Thus the same part of the moon always faces the earth. But the moon's motion in relation to that of the earth is slightly uneven, and as a result sometimes we can peek a bit farther around one edge, sometimes we can see a little more around the other. At one time or another observers here on earth have seen nearly 60% of the moon's surface.

Because of this unevenness in the moon's motion, the outline of the moon against the sky is continually changing. It is this marginal zone of the moon, which at one

time or another will be seen in outline, that is being studied.

Large-scale profiles of the moon are being constructed from photographs taken at the U. S. Naval Observatory, the Yale University Southern Station at Johannesburg, and at the Lowell Observatory at Flagstaff, Ariz. Measurements are made by automatic apparatus utilizing a microscope equipped with light-sensitive cells.

The last survey of the moon was completed in 1914 by the late Prof. Friedrich Hayn of the University of Leipzig. The features of the moon, of course, have not changed since then, but a more complete and detailed map is needed to picture all possible outlines of the moon.

Science News Letter, March 29, 1952

## INVENTION

## Patent Salt Shaker That Is Free-Flowing

► SALT KEEPS flowing from a new salt shaker no matter how damp and humid the weather may be. James H. Young, Mount Lebanon, Pa., received patent number 2,588,600 for the salt shaker. A dessicant is held within the salt shaker between the cap and the part where the salt is.

Science News Letter, March 29, 1952

## BOTANY

## Take First Successful Picture of Plant Cell Wall

## See Front Cover

► THE FIRST successful picture of the outside wall of a plant cell was recently taken by University of California College of Agriculture plant pathologists.

Magnified 10,000 times under the electron microscope, the cell wall looks very much like a piece of matted felt. It is shown magnified 57,500 times on the cover of this week's SCIENCE NEWS LETTER.

The wall is made up of tiny fiber-like strands of cellulose, the main components of paper and cotton.

Pieces of turnip root were attacked by an enzyme which decomposes the pectin, or glue-like binding material, holding the cells together. When this pectin is washed away, the cells fall apart as little blocks. Under the electron microscope, the surface of these individual cells shows up clearly as a mass of cellulose strands.

Science News Letter, March 29, 1952

## NAVIGATION

## Submarine Log System Makes Navigation Easier

► A NEW "brain" for submarines is currently being developed at the University of Cincinnati's Applied Science Research Laboratory.

Designed to help submarine navigators chart their courses across ocean floors more easily, the log system has certain "classified" refinements which make it more accurate than present-day, dead reckoning analyzer indicators now being used on subs.

(Dead-reckoning analyzer indicators can be compared to automobile speedometers, except the analyzers yield latitude and longitude from which position as well as speed is figured.)

In regard to the new "brain", the Navy Department said:

"It is expected that this new log system will provide extremely accurate measurements of the ship's speed and distance traveled through the water. This information is essential to safe navigation and particularly so during long periods of underwater operations.

"In addition, data supplied automatically by the log equipment to various computers play a vital part in the offensive power of the submarine."

Research work began at the University over six years ago when graduate students in the applied science department tackled the problem as it was presented by the Navy Department.

At present a manufacturing prototype is being developed which will guide manufacturers who later will produce the equipment for the Navy.

Science News Letter, March 29, 1952



## ANIMAL NUTRITION

**Turkeys Fed Vitamin Keep Fresh Longer in Storage**

► **TURKEYS FED** high vitamin E diets stay fresh longer in cold storage, Prof. Agnes Fay Morgan of the home economics department at the University of California's College of Agriculture has found.

The vitamin, tested at various amounts for different periods, produced best results at the rate of 0.1% of the total feed for 35 days prior to killing for storage.

The vitamin E slows down fat breakdown in the birds during cold storage. The more vitamin present in the bird, the less rancidity was found by taste panels testing birds stored as long as nine months. Greater retention of vitamin E was found at low level feeding for 35 days than feeding large amounts for two and a half days prior to killing.

The vitamin was mixed with the regular feed during the tests. Commercial feeding of extra vitamin E by turkey growers would depend on the cost of the vitamin.

The birds actually retained a small fraction of the total vitamin eaten. Storage of the vitamin is greatest in the liver, with the breast, gizzard, leg and breast muscles following.

*Science News Letter, March 29, 1952*

## ARCHITECTURE

**Melting Snow Dangerous To House Roofs and Walls**

► **WINTER SNOWS** melting on house-tops because of heat-leaky roofs may damage ceilings, interior and exterior walls, or even the roof itself, William A. Russell reported to the Housing and Home Finance Agency.

A structural engineer for the Agency, Mr. Russell said poorly insulated roofs allowed escaping heat to melt the underside of the snow blanket on the roof. The melted snow often is kept from running off because ice dams form farther down the roof near the eaves where no heat escapes.

Thus blocked, the water backs up under roof shingles and may seep through the roof itself to damage ceilings, walls, paints and wall paper on the inside of the house.

The problem is encountered particularly in areas where prolonged cold weather combines with heavy snows and warm roofs to form the ice dams. Good ventilation, proper insulation and extended flashing were suggested as solutions.

Properly ventilated attics, he said, are almost as cold as the outside. When spring comes, the snow melts on the upper side of the blanket and runs right off.

Thorough insulation of the ceiling just under the roof minimizes heat loss into the attic. Outside walls also should be insulated to prevent heat from escaping.

Flashing, an alternative to proper ventilation and insulation, is a metal strip

placed wherever the roof angles, such as over protruding windows. It should be extended several feet up from the eaves of the house and be made unusually wide in the roof angles.

However, flashing is costly, uses critical metal and does not save heat or increase summer comfort as proper ventilation and insulation do, Mr. Russell pointed out in "Housing Research," a quarterly publication of the agency.

Screened or louvered ventilators should contain at least one square foot of area for every 150 square feet of ceiling. Vent-holes should be spaced near the top of the attic walls and also near the eaves so air can circulate through the attic, keeping it cool.

*Science News Letter, March 29, 1952*

## MEDICINE

**Cortisone and ACTH Prolong Leukemia Victims' Lives**

► **CHILD LEUKEMIA** victims have recently had their lives prolonged, on the average, three to four months by giving ACTH or cortisone after anti-folic acid chemicals no longer helped, or by the reverse, giving the anti-folics after the hormone chemicals failed.

The hormones apparently have a different primary mode of action on the leukemic process from the anti-folic chemicals. Using first one and then the other of these chemicals does not cure, but the method may be important of sensitivity to the first chemical tried can be reestablished. The studies are reported by Drs. Elizabeth M. Kingsley Pillers, Joseph H. Burchenal, Leonard P. Eliel and Olaf H. Pearson of Memorial Hospital and Sloan-Kettering Institute, New York, in the *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* (March 22).

A new treatment of cancers of hormone-producing tissues such as sex glands and adrenal glands may result from discovery in gland cancers of an enzyme that changes relatively inactive body compounds into hormones. This discovery was made by Drs. Leo T. Samuels, M. L. Helmreich, M. B. Lasater and Hans Reich of the University of Utah Medical College at Salt Lake City. It was announced by the American Cancer Society which financed the research.

TEM, short for triethylene melamine, shows more versatility than other chemicals used in treatment of the leukemias, Hodgkin's disease and other malignant disorders of white blood cell forming tissues. Studies showing this are reported by Drs. Jay H. Silverberg of Pittsburgh and William Dameshek of Boston in the *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* (March 22). TEM is related to the nitrogen mustards but has the advantages that it can be given by mouth and causes less frequent and less severe reactions. It is not a cure but produced long periods of improvement in some patients.

*Science News Letter, March 29, 1952*

**IN SCIENCE**

## PUBLIC SAFETY

**Plan Safety Program For Home Gardens**

► **WHILE YOU** are planning your home garden, plan a safety program for yourself and your family. Farmers, also, should start now, before their busy season, to set up precautions for cutting down the number of accidents that are otherwise so likely to come on the farm.

Take a look around the place and see if you can spot potential accident and fire hazards and then eliminate them. Here are some simple precautions to follow:

Have a place for things and keep them there.

Avoid storing loose materials overhead in the rafters.

Keep things out from underfoot as much as possible. It is easy to trip over a pitchfork handle.

Farm buildings with lights should have the wires inspected. Have a dry place to stand when throwing switches.

If using a lantern, hang it outside the barn and provide a secure place to hang it.

Avoid smoking or lighting matches around the barn. (Remember this, those of you who plan to work on farms this summer.)

Do not store gasoline or kerosene in the barn.

Oily rags or waste should be burned.

And here are some additional pointers: Learn to lift heavy objects correctly to avoid strains, sprains, and ruptures. The trick is to use leg instead of back muscles. Keep your back as nearly vertical as possible, feet close to the object being lifted and about 10 inches apart. Keep the hips lower than the shoulders and the arms straight. Don't try to lift something too heavy for your strength. Get help or rig a block and tackle.

*Science News Letter, March 29, 1952*

## INVENTION

**Air Conditioning for Drive-In Theaters**

► **NOW AIR CONDITIONING** is coming to the drive-in theater. Main purpose of the invention, according to William S. Oftebro and William E. Fleming, Stockton, Calif., is to provide heat for automobiles without the danger from keeping the automobile engines running. Fresh air blower assemblies are placed between two cars. Hoses bring air into the cars and small electric heaters, attached to the car ends of the hoses, heat the air. The automobile air conditioner received patent number 2,588,756.

*Science News Letter, March 29, 1952*



# SCIENCE FIELDS

## MEDICINE

### Pale Lips No Guide To Anemia in Children

► PALE CHILDREN are no more anemic than those with normal color, says Dr. John Yudkin, professor of physiology at London University, London.

Prof. Yudkin studied 1,200 school children and found there was no association between the color of a child's cheeks, lips and eyelids and the level of hemoglobin in his blood.

Nor were the pale-faced children in any way inferior to their rosy-cheeked brothers and sisters in such things as susceptibility to nose and throat infections, soundness of teeth, intelligence, educational standing, vital capacity, endurance, bone development and sharpness of eyesight.

On the other hand, the pale children were, on the average, five pounds lighter and two-thirds of an inch shorter than the children who were not pale, and the strength of their grip was almost two pounds weaker. Pale children also seemed to be less well nourished.

Details of Dr. Yudkin's study are reported to fellow physicians in the LANCET.

Science News Letter, March 29, 1952

## NAVIGATION

### Navigation Device Tells Distance to Destination

► A NAVIGATIONAL device that automatically tells pilots not only where they are, but exactly how far they are from their destination and the direction in which to proceed to reach it, has been developed by Capt. Robert Jaspersen, U. S. Navy (retired).

"While designed primarily for use in high-speed aircraft, the system may be employed in surface craft, or to fix the position of any point on the earth's surface," Capt. Jaspersen reported at the Institute of Navigation meeting in Annapolis.

Developer of an automatic pilot that uses true celestial navigation to hold a guided missile to its course, Capt. Jaspersen reports that once his new device has been set on two stars, the system will continue to function although one or both stars may be obscured temporarily.

The Jaspersen device is based primarily upon the Zerbee Celestial Fix Finder. This instrument for solving several spherical triangles simultaneously was patented by Louis J. Zerbee of Bellefontaine, Ohio, in August of 1950. The Zerbee device uses the declination, Greenwich hour angle and altitude of two selected celestial bodies to get instan-

taneously the observer's longitude and latitude at a given instant. The observer's position is accurately located within a mile.

Two additional factors are incorporated in Capt. Jaspersen's device. One gives the latitude and longitude of the pilot's destination, the other mechanically joins the plane's present position with his destination. The plane's course and distance from its point of destination are determined instantly.

To eliminate the bothersome task of manually setting the stars' declination and sidereal hour angle each time the fix finder is used, Capt. Jaspersen incorporates two star viewers to simulate the apparent motions of the chosen stars. These must be checked from time to time, of course, to be sure the selected stars are centered in the viewer.

Science News Letter, March 29, 1952

## ARCHAEOLOGY

### Fifteenth Century Helmet Plowed Up in New Mexico

► AN INDIAN plowing his garden in New Mexico turned up a strange looking object.

This has now been identified by Harold L. Peterson, expert of the National Park Service, as a helmet such as was worn by fighting men back in the days of bows and arrows.

Although San Gabriel del Yunque, on the site of which settlement the helmet was unearthed, was not established until 1598, the helmet itself may date back as far as 1480, Mr. Peterson announced.

This is not to be wondered at, Mr. Peterson explains. Don Juan de Onate, founder of San Gabriel, had to supply his expedition largely at his own expense and did so out of "surplus," purchasing much obsolete equipment.

"The helmet as received was badly corroded and very fragile," Mr. Peterson reports. "Magnet tests indicated that there was very little, if any, metal left, and that almost nothing but oxide remained. Very careful treatment was required to protect and strengthen it. A reduction bath such as is often given to excavated objects would have been useless because of the lack of a sound metal base.

"Since virtually nothing but oxidation remained, the helmet was soaked first in tepid water to loosen clay and dirt and to leach out salts which had collected in corrosion. The loosened materials were then removed with a very soft brush. Then followed a washing with a neutral detergent.

"Thereafter it was dried thoroughly in an oven in which the temperature was gradually raised to the temperature of melted wax in which it was immersed for 15 minutes. The wax serves both as a preservative, to prevent further deterioration, and as an adhesive, helping to hold the oxidation particles together."

Science News Letter, March 29, 1952

## PUBLIC SAFETY

### Check Home Electric Appliances

► SOME OF the electric appliances used regularly in the home may carry a hidden hazard. The home freezer, ironer and washing machine are among these.

The danger is that of electric shock if these and other appliances used with water or in damp places are not grounded.

"Without this special protection, a stray current, seeking the easiest way to the ground, may run through your body," warn specialists of the U. S. Department of Agriculture.

Be sure an electric washing machine is safely grounded, they advise. Some manufacturers equip their washers with a cord that grounds the machine whenever it is plugged in. Such a cord has a 3-prong plug and requires a 3-hole outlet to fit it.

Some other washers have a 3-wire cord with a regular 2-prong plug that fits the usual 2-hole outlet. The third wire, for grounding, branches off the cord near the plug and goes into a tiny socket that replaces one of the screws that hold the cover plate on the outlet.

This is a good "ground" if the wire is metallic cable. With non-metallic cable, used in many farmhouses, it does not give protection unless the outlet itself has a good "ground."

If a washing machine has only a 2-wire cord, it is not grounded, but should be. Here's how to do it: Attach one end of a separate length of insulated wire to the frame of the electric motor and the other end to a water pipe which will carry the current to the ground. Use a clamp fitting to keep each end firmly attached. The wire should be bare where it is clamped.

Science News Letter, March 29, 1952

## MEDICINE

### Malaria Preventive Used On 1,000 Korean Veterans

► A THOUSAND soldiers returned from Korea will be the human guinea pigs this spring and summer for a test of primaquine as a malaria preventive.

The 1,000 men have all been exposed to malaria, but none of them, so far as his history shows, has had any attacks of this chills and fever disease. And none of them has had any of the relatively new anti-malaria drug. Consequently some might be expected to come down with a malaria attack this coming summer. So the 1,000 will get a dose of primaquine every day for 14 days and then be watched all summer to see whether malaria develops.

If none of them gets malaria, scientists in the Office of the Surgeon General of the Army will consider it proof that primaquine can prevent malaria under these conditions.

Science News Letter, March 29, 1952

## ASTRONOMY

# Mars Still Getting Brighter

By end of April, Mars will have doubled in brightness to be about equal to Sirius. Brilliance and red color make it easy to locate in the southeast sky.

By JAMES STOKLEY

► MOST STRIKING astronomical event on the program for April will be the way the planet Mars brightens as it comes near the earth, in preparation for its closest approach in May.

The location of Mars is shown on the accompanying maps. These give the positions of the heavenly bodies at about ten o'clock on the first of April, nine o'clock at the middle of the month and eight o'clock at the end.

Mars, in the constellation of Libra, the scales, shown low in the southeast, is moving in the direction of the next-door group of Virgo, the virgin.

At the beginning of April, Mars is of magnitude minus 0.8. This is brighter than any star with the exception of Sirius, seen in the southwest. By the end of the month it will practically double in brightness, and will then about equal Sirius. Its brilliance and red color make Mars easy to locate.

## Saturn Also Visible

Another planet can also be seen a little higher, in Virgo. This is Saturn. Though much fainter than Mars, it is considerably brighter than Spica, the brightest star in that constellation.

Next to Virgo, to the right, standing high in the southern sky, is the figure of Leo, the lion, with the smaller group known as the "sickle" and the star Regulus marking the end of the handle of that implement.

High in the east we find Bootes, the bear-driver, with the bright star Arcturus. A good way to locate this orb is first to look to the northeast for the familiar Great Dipper, which is now upside down. At the left are the well-known "pointers," whose direction, followed downward, shows the location of Polaris, the pole star.

If the curve of the dipper's handle is followed toward the right, the first bright star one comes to is Arcturus. Considerably below Bootes and close to the northeastern horizon is Vega, in Lyra, the lyre, not very conspicuous at present, but on summer evenings it is the brightest star visible.

Toward the west, making their last appearance before disappearing from the evening skies until next autumn, are the stars of Orion and his neighbors. Already, as shown on the maps, the lower part of Orion has set, though bright Betelgeuse can still

be seen. To the left is Sirius, in Canis Major, the great dog, and above it we find Canis Minor, the lesser dog, with Procyon.

Highest of these constellations is Gemini, the twins, shown partly on the northern map and partly on the southern. In it are the stars Castor and Pollux, the latter being brighter.

A little below this figure, toward the northwestern horizon, stands Auriga, the charioteer, with Capella, and below him is Taurus, the bull, with Aldebaran. Though a star of the first magnitude, it is, like Vega, made to appear dimmer because it is so low and more of its light is absorbed by passage through the earth's atmosphere than when it is high overhead.

## Hydra at Its Best

Seen at its best in April, even though it contains no stars of the first magnitude, is Hydra, the water-snake, which extends in a long, zig-zag line of stars across the southern sky. The head is formed by the quadrilateral just below Cancer, the crab, which in turn is between Regulus and Pollux. The third star in the serpent's body, Alphard, which is of the second magnitude and red in color, is supposed to represent the reptile's heart.

As the earth and the other planets revolve about the sun, most of them follow orbits that are nearly circular. Since they have different periods for their times of revolution, we see the others, from the earth, in different directions. Sometimes one is seen in the same direction as the sun, and then it is said to be in conjunction with that body.

Or, again, a planet farther from the sun than earth may be seen in the opposite

direction from the sun, and this is called opposition. Then, of course, the distance of the planet from the earth is equal to the difference between its distance from the sun and our distance from the sun. Thus it is closest to us when near opposition.

If the orbits were truly circular, the closest approach would come exactly at this position. As it is, they are somewhat stretched out into ellipses, and the time of least distance may come a little before or after opposition.

During this month of April we have the unusual experience of three planets in opposition, though only two, Mars and Saturn, are visible to the naked eye. The third is Neptune, which may be seen only with the aid of a telescope. Its opposition with the sun comes on April 10, when it is only 2,722,000,000 miles away! Saturn's opposition comes on the first day of April, with a distance of 798,900 miles.

Mars comes considerably closer, with opposition on the last day of the month. Then it will be 52,360,000 miles from us, about 11,560,000 miles closer than it is on April 1, a fact which well explains its two-fold increase in brightness during April.

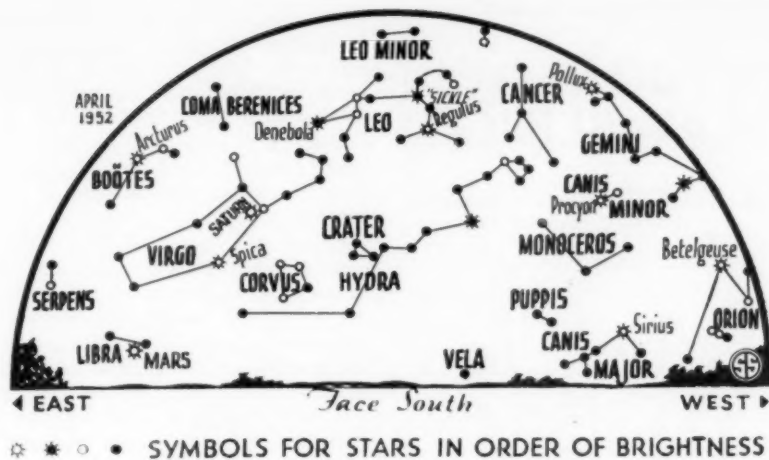
Its nearest approach to earth, however, will not come until May 8, when it moves in to 51,860,000 miles. This, however, will not be enough to make any great difference in brightness. About April 25 it reaches its maximum in brilliance, magnitude minus 1.5, and remains at this until about May 13, when it will start to dim again as it recedes from our part of the solar system.

Two other naked-eye planets are in conjunction in April and hence invisible because they rise and set with the sun, and are above the horizon principally during daytime hours.

Because Mercury moves in an orbit smaller than ours, it can never get into opposition, but it has two kinds of conjunction. One, which it reaches on April 5,







is "inferior conjunction," when it is between us and the sun. The other kind, when Mercury is on the far side of the sun, is "superior conjunction," which occurs on June 8.

Jupiter, which shone so brilliantly in the evening sky during the past winter, reaches conjunction on April 17. By the end of May it will have moved sufficiently far to the west of the sun to enable it to rise in the east about an hour before sunrise, and so begin to be visible at dawn as a morning star.

Though Venus does not reach superior conjunction until June 24, it is already nearly in the sun's direction and far beyond that body. At the beginning of April it rises less than an hour before sunrise, after the morning twilight has well begun.

Venus is still so low, when the sun appears, that it is hardly possible to see it. Not until next autumn will Venus have moved sufficiently far to the east of the sun to permit us to view it as an evening star low in the west.

### Celestial Time Table for April

April	EST	
1	5:00 a.m.	Saturn opposite sun, distance 798,900,000 miles
2	3:48 a.m.	Moon is in first quarter
3	1:00 p.m.	Moon farthest, distance 251,300 miles
5	5:00 a.m.	Mercury between earth and sun
9	3:26 p.m.	Moon passes Saturn
10	2:00 a.m.	Neptune nearest, distance 2,722,000,000 miles
	3:53 a.m.	Full moon
12	5:48 a.m.	Moon passes Mars
17	2:00 a.m.	Jupiter beyond sun
	4:07 a.m.	Moon in last quarter
18	3:00 a.m.	Moon nearest, distance 229,800 miles
21	early a.m.	Meteors visible radiating from constellation of Lyra
24	2:27 a.m.	New moon
30	8:00 p.m.	Mars opposite sun, distance 52,360,000 miles

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, March 29, 1952

### ELECTRONICS

## Printed "Wires" for TV

► PRINTED CIRCUITS for television receivers should save critical materials and reduce labor costs, W. H. Hannahs and Norman Stein of the Sylvania Electric Products Inc., have reported to the Institute of Radio Engineers in New York.

A new production technique divides television circuits into about 20 sub-assemblies, each having an electron tube and associated components.

Each unit is printed on two small cards, one being made of a ceramic material and the other made of a plastic. Electrical contacts between connecting circuit sub-assemblies is made by dipping the cards in molten solder and then joining them.

Printed circuits have been a reality ever since the proximity fuze was developed during World War II, although the principle has been known and thought prac-

tical since the early 1900's. Today they are being used commercially in some amplifiers, transmitters, receivers and hearing aids.

Basically, a circuit is printed on a ceramic or plastic plate using a metallic "ink." Circuits have been sprayed on, painted on, etched on, die-stamped on, dusted on, chemically deposited and applied through a vacuum process.

Printed television circuits are expected to reduce a television set's 500 hand-soldered connections by as much as 60%.

Already some printed circuits are being used in television sets. But though the circuits can be produced quickly, costs of materials needed to print the circuits will keep prices about the same as competitive sets not using printed circuits. Their performance is at least equal to commercial circuits.

Science News Letter, March 29, 1952

### OPTICS

## Reverse Sunglasses Aid Pilots Flying at Night

► REVERSE SUNGLASSES will help combat-wise World War II veteran pilots at the controls of night bombers and fighter planes in Korea.

They were designed, by Lt. Wayne E. Gulley of the Air Force School of Aviation Medicine, Randolph Field, Tex., for the pilot with a slight defect of vision that can be corrected by eye glasses.

Just as corrective lenses can be tinted to give protection against the sun, the lenses of these glasses are treated to cut down the loss of light by reflection that is bothersome to a person wearing glasses at night.

The treatment consists in coating the lenses with magnesium fluoride, a substance used on costly camera lenses to cut down loss of light by reflection. To avoid the trouble with light glinting from behind on a small lens, these special night lenses are fitted into the standard Air Force sunglasses frames that cover the pilot's whole range of vision.

One drawback to the new glasses is that the soft metallic coating begins to wear off in irregular patches after a few months of normal use. Then the glasses must be cleaned and recoated. Further research may develop a way to harden the coating and do away with this inconvenience.

Science News Letter, March 29, 1952

### BERTRAND RUSSELL'S DICTIONARY OF MIND MATTER & MORALS

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## PUBLIC SAFETY

Teach Youngsters  
Bicycle Safety

► THIS IS the season when millions of youngsters take to the streets and highways on bicycles. For their protection, they should learn and practice the rules of safe bicycling.

Hundreds of lives are lost each year through bicycle accidents. Most of these are the result of collisions with motor vehicles, the rest being the result of falls off bicycles.

To help the young bicyclists, and old ones, too, safety experts of the Metropolitan Life Insurance Company have suggested the following rules:

"Don't weave in and out of traffic in competition with motor vehicles; you and your bike are almost sure to come off second best in a collision. Be particularly careful at intersections.

"Never—oh, never—hitch onto trucks or automobiles!

"Don't ride two people on a single bicycle; it's not built for two—with safety; ride single file on the highway.

"Use lights at night, and at all times keep the bicycle—especially lights and braking mechanism—in good repair.

"Observe all traffic rules and signs; they apply to you just as much as to the biggest cross-country transport truck."

Science News Letter, March 29, 1952

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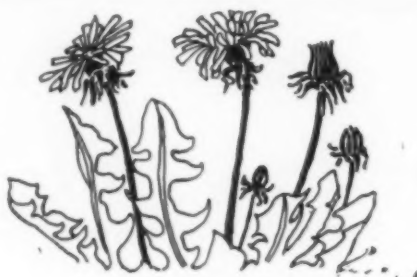
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## BOTANY

## NATURE RAMBLINGS



Early Dandelions

► POETS, RHAPSODIZING over the coming of spring, sing of violets and crocuses and snowdrops and daffydownillies, but strangely neglect the dandelion.

Yet this tousled towhead is among the earliest of flowers, impudently showing its undesired face in all sorts of places, exposed to the rawest winds, if only the sun shines strongly there. In fact, March dandelions might well serve as a kind of large-scale soil thermometer to point out the patches that warm up first.

You find a line of them nestling along the lee of a house, or even in the slight shelter of a raised sidewalk. And where a group of buildings is heated from a central boiler plant with radiating pipe lines under the ground, their course is marked plainly on the surface by zones of yellow bloom.

These early dandelions resemble their later successors of the close-cropped lawns

of summer, in that their stems are short. Long stems belong to the long-grass period, and to dandelions trapped in partial shade, which is uncongenial to their kind. Shortness of stem seems to be linked up with free access of light, and possibly also with higher evaporating power of the air; though these are only guesses—nobody really knows why for sure as yet.

It may seem queer that these flowers go right on and form normal heads of seed, when there are no insects about to carry the fertilizing pollen. The secret is that, though dandelions form pollen, they never use it. These plants produce their seeds without the formality of fertilization, after the weird fashion of plant lice and water-fleas, that regularly bring forth fatherless offspring.

Dandelions, like other plants that flower very early in the spring, obtain the material and energy necessary for the expensive and exhausting business of flower production from a store of food manufactured during the previous year. In the case of the dandelion this is stored in the thickened root.

The dandelions' larder is not stocked with either starch or sugar, the commonest of plant storage foods. It is a queer stuff, like starch in some respects but soluble like sugar, called inulin. It can be converted into sugar very easily by either natural processes or by artificial means in the laboratory.

Normally the dandelion grows from seed two or three years, a flowerless rosette of leaves, before it produces its first flower. After that it goes into business on a great scale and produces blossoms faster than there is any demand for them, for five to seven years before it dies. And cutting its head off only rejuvenates the plant.

Science News Letter, March 29, 1952

## TECHNOLOGY

## Jeep Has Snorkel Tube

► FORMER SOLDIERS, who may still have calluses from riding in Army vehicles, probably will marvel at the new military jeep model scheduled for production this spring.

The new jeep will be five inches longer, two inches wider, 72 instead of 60 horsepower, and will have a 300-mile cruising range without refueling, as contrasted to its previous 180-mile range. The Department of Defense explained that the new 72 horsepower F-head engine and a larger gas tank were responsible for the increased cruising range.

Furthermore, the jeep will come complete with a kit which can be used to make it ready for underwater operation in 15 minutes, as contrasted to hours of preparation necessary for previous models. It also will be adaptable to arctic and desert use.

Snorkel (intake) and snorter (exhaust) tubes allow the engine to "breathe" underwater. The operator must waterproof battery terminals, but a lever situated on the dashboard can be pulled to waterproof the oil breather.

New improved brakes provide faster stopping for the jeep. Flanged fenders keep mud from splashing on the windshield. A new machine-gun mount has been installed opposite the driver's side on the front seat.

And seats, which soldiers previously have likened to crude buckboards, will be made of "soft plastic," the Department of Defense said. Larger springs and new shock absorbers also will help to make drivers and riders more comfortable.

The vehicle will be produced by Willys-Overland Motors, Inc., Toledo, Ohio.

Science News Letter, March 29, 1952



## PHYSIOLOGY

**You Roll Your Eyes  
When You Blink Them**

► WHEN YOU blink you also roll your eyes. This was disclosed when Dr. B. L. Ginsborg of the University of Reading, England, attached a light-reflecting flat to the contact lenses worn by his subjects and photographed the movements of a light beam reflected from the flat. Results are reported in NATURE (March 8).

As the subject gazes fixedly at one point, he is inclined to blink involuntarily. Under cover of the lowered lids, the eyes play truant from the point of fixation.

At first they roll inward and upward for about four hundredths of a second. The times for the two eyes are identical, but the angle of the movement may be quite different. In returning the eye slows up. It may stop and even reverse direction a couple of times. This may occupy seven hundredths of a second. Nevertheless, it completes the circuit and is back on the job again before the blink is completed in 0.11 second.

Science News Letter, March 29, 1952

## PUBLIC HEALTH

**Brass Metal Can Cause  
Skin Blisters of Workers**

► BRASS HAS for the first time been proved capable of causing skin trouble in persons working with it.

Proof of brass as the cause of red, itching rash with blisters in five cases is reported by Dr. George E. Morris, Boston. Because this metal has never before been proved a cause of skin trouble, the cases were not at first recognized and insurance companies were not willing to accept such a diagnosis without contest.

One case was that of a woman whose job was to dismantle brass electrical fixtures and separate the parts. She got the rash on feet and hands. She reported that small washers continually fell into her shoes and started the rash on her feet.

Patch tests with the brass parts strapped to her knee gave proof that the metal was causing the trouble. When the brass was removed after 48 hours, the place on her knee was swollen, red and blistered. The test was repeated six months after treatment had cleared the condition on her hands and feet. It was again positive.

The other cases were in a woman who ran a machine that cut out brass watch balances, a woman who worked in a plating room setting up racks, a woman who assembled brass toys and a man who worked in a brass foundry near two grinding wheels that continually showered a fine spray of brass filings over him.

Details of Dr. Morris' study are reported to fellow physicians in the New England JOURNAL OF MEDICINE, (March 6).

Science News Letter, March 29, 1952

**Haven't you always said****"I wish I had a job  
where it's fun to live and work"?**

Because your income depends as much upon getting a job where your services are most needed as upon your ability

*you don't have to quit working in order to put an end to commuting or to live in California, Florida, Hawaii, the Colorado Rockies or the other wonderful places in America.*

You know what opportunities people found who moved to Houston or Los Angeles 15-20 years ago when these cities were just starting to grow. Jobs were easier to get, they paid better, the first ones to arrive got ahead faster, and anyone opening a small business found it expanding as these cities boomed.

Even as you read this, dozens of new plants are rising in small communities all the way from Carolina to California. New roads are opening hitherto inaccessible country. New irrigation projects are bringing water and riches to vast areas like the Columbia River Basin and a dozen others.

Probably you've read in newspapers and magazines how these big new investments, running into the billions of dollars, are changing the face of America.

But no one probably bothered to tell you of the resulting thousands of opportunities for better jobs with pay envelopes of as much as \$100-\$200 a week for clerks and machine operators alone and the enormous opportunities for small, one man businesses.

Today, you can hear people moan, "If I had only moved to Los Angeles or Dallas 15 years ago, when these towns were just beginning to boom, I'd be better off today, maybe I'd even be rich."

In Norman Ford's new book, WHERE TO FIND OPPORTUNITY TODAY, you learn all about hundreds of towns which are just beginning to grow today, where opportunity is as ripe now as it was years ago in places like Los Angeles and Dallas.

Norman D. Ford, who knows America like few other people, has searched all over America to bring you the names of hundreds of towns along the seashore or in the mountains; in California, Florida, Alaska, and elsewhere, where you can earn more money today and also enjoy the kind of life most people think that only retired people can afford.

In this new book, WHERE TO FIND OPPORTUNITY TODAY, you learn

—the towns where opportunities are brightest for bookkeepers, accountants, mechanics and machinists, architects, engineers, interior decorators, doctors and 200 other occupations;

—where new one-man businesses are needed, where to open tourist cabins on brand new highways; the business you can open on \$1,500; where to start a dog kennel, a gift shop, a boat rental

service, a candy store, a book store, etc., etc.,—even where to raise flowers for sale.

These are the towns:

—where you can live close to your job; where you can have your bit of land and you don't crowd up against neighbors;

—where you can golf, hunt, fish, swim, go hiking all within a few minutes of your front door and right after quitting work (no more weary hours spent riding back and forth from your job).

Why only WISH you had a job

where it's fun to live and work!

Why not see for yourself that a man who must support himself can now, today, have the kind of life he always dreams of for some far-off distant day.

Remember, too, these are the towns of opportunity. Tomorrow, don't be like those men who moan today, "If I had only moved to Los Angeles or Dallas 15 years ago, when they were just beginning to boom, I'd have a lot more money today—might even be rich."

Today, order Norman Ford's WHERE TO FIND OPPORTUNITY TODAY. Price only \$1, on a money back guarantee if not satisfied. Fill out coupon below, and mail with \$1 bill to HARIAN PUBLICATIONS, 8 THIRD AVENUE, GREENLAWN, NEW YORK.

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NORMAN FORD, who is known to millions through his hundreds of radio talks on the major radio networks, constantly answers questions like these:

1. I WANT TO open a gift shop in a fast-growing Florida resort. Which are the fastest-growing resorts?
2. I'VE BEEN A newspaper reporter in Chicago for 20 years. Now I'd like to open my own small weekly newspaper in Texas. Can you name some fast-growing community in Texas where such a weekly should succeed?
3. I'M A VET with a few thousand dollars saved up. Can I qualify for a farm in the Columbia Basin?
4. WHERE CAN I build tourist cabins on a brand new highway to a national park, where competition is at a minimum?
5. IS IT TRUE you can still homestead 160 acres of good land in Alaska with immediate good farming prospects?

If you consulted Mr. Ford in his office or by mail, you'd pay upwards of \$25. But in his book, WHERE TO FIND OPPORTUNITY TODAY, which sells for only \$1, you can obtain all the facts about America's fastest growing areas and the best places to live and enjoy yourself while earning a good income.

6. I DON'T WANT to leave New York City yet, but I'd like to buy some real estate for profit in a fast-growing area. Where do you advise buying? How can I tell in which direction the business section of a growing town will spread?
7. I'M ABOUT TO retire and would like to open a boat rental service in the Ozarks. Where do you suggest? And could I buy a country home there for \$3,500?
8. I'M DUE TO graduate from college in a few months and would like to look for a job in a fast-growing California city. Can you name the fastest-growing cities in California aside from Los Angeles? Can you tell me what the housing and school situation is like in them?
9. WHAT ARE MY chances of succeeding with a new sports and hobby shop in Coolidge, Arizona?
10. I'M A WIDOW with a child who needs a mild, sunny climate the year 'round. Where do I stand a good chance of obtaining employment as a stenographer?

# Books of the Week

TO SERVE YOU: To get books, send us a check or money order to cover retail price. Address Book Dept., SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C. Ask for free publication direct from issuing organization.

AS YOU PASS BY—Kenneth Holcomb Dunshee—*Hastings House*, 170 p., illus., \$10.00. Restoring in its beautifully illustrated pages the New York of years gone by.

THE ASTOUNDING SCIENCE FICTION ANTHOLOGY—John W. Campbell, Jr., Ed.—*Simon and Schuster*, 583 p., \$3.95. The editor, who also edits "Astounding Science Fiction" magazine, has picked his personal favorites for this anthology.

THE ASTRONOMICAL UNIVERSE: An Introductory Text in College Astronomy—Wesley S. Krogdahl—*Macmillan*, 599 p., illus., \$6.25. A text without mathematics for general students as well as future astronomers.

BRUISING, FREEZING, AND CHEMICAL INJURY OF POTATOES IN TRANSIT—R. C. Wright—*Govt. Printing Office*, Rev. ed., Technical Bulletin No. 668, 21 p., illus., paper, 15 cents. Much of the injury attributed to other causes is really due to bruising.

CASE HISTORIES IN PSYCHOSOMATIC MEDICINE—Henry H. W. Miles, Stanley Cobb and Harley C. Shands, Eds.—*Norton*, 301 p., illus., \$4.50. Describing cases that are typical of psychosomatic difficulties and indicating how psychiatrist and internist can work together in the study and treatment of disease.

## HISTORY OF AMERICAN PSYCHOLOGY

by A. A. Roback

Here is the first history of American Psychology ever to appear, showing through development stages how this vastly significant aspect of human study reached its present importance. The volume presents an over-all picture covering three centuries, including the numerous divisions and activities of the powerful American Psychological Association.

Author of more than twenty books on human behaviour (many translated into foreign languages), and as one who stood close to the chief architects of the science, Dr. Roback naturally possesses much first-hand information. The ever-growing importance of the subject to students, researchers, psychologists, and intelligent laymen renders this an invaluable tool for study, reference, and genuine interest. Copiously illustrated. \$6.00

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### LIBRARY PUBLISHERS

8 West 40th St., New York 18, N. Y.

COMPOSITION OF FOODS USED IN FAR EASTERN COUNTRIES—Woot-Tsuen Wu Leung, R. K. Pecot and B. K. Watt—*Govt. Printing Office*, USDA Agriculture Handbook No. 34, 62 p., paper, 30 cents. Provides a table showing amounts of 11 nutrients in 362 foods, only about half of which are familiar in the Western world. An extensive bibliography is included.

EFFECTS OF EXTERNAL BETA RADIATION—Raymond E. Zirkle, Ed.—*McGraw-Hill*, 242 p., illus., \$3.25. Reports of work carried out at Clinton Laboratories, Oak Ridge, as part of an intensive radiobiological program.

ESSAY IN PHYSICS—Herbert L. Samuel—*Harcourt, Brace*, 178 p., \$3.00. A philosopher presents a new view of the physical world. He restores the ether in a new form. A letter of comment by Einstein is included.

FACTOR ANALYSIS: An Introduction and Manual for the Psychologist and Social Scientist—Raymond B. Cattell—*Harper*, 462 p., \$6.00. An introductory text for undergraduates and also a handbook in the computation laboratory.

FIRE RESISTANCE OF SHUTTERS FOR MOVING-STAIRWAY OPENINGS—Noland D. Mitchell, Edward D. Bender and James V. Ryan—*Govt. Printing Office*, 9 p., illus., paper, 10 cents. Reporting tests conducted at the National Bureau of Standards.

FOUNDATIONS OF WORLD ORGANIZATION: A Political and Cultural Appraisal—Lyman Bryson, Louis Finkelstein, Harold D. Lasswell and R. M. MacIver—*Harper*, 498 p., \$4.00. Papers prepared for the eleventh meeting of the Conference on Science, Philosophy and Religion in Their Relation to the Democratic Way of Life as a new attempt to find the way to international understanding and peace.

HIGHER EDUCATION IN THE UNITED STATES: A Summary View—Francis Millet Rogers—*Harvard University Press*, 54 p., illus., paper, 75 cents. A revised version of what was originally intended to acquaint Brazilians with the U. S. way of organizing higher education.

MAN, MONEY, AND GOODS—John S. Gamba—*Columbia University Press*, 339 p., illus., \$3.75. Intended to appeal to the general reader and clarify economics for him without puzzling or repelling him.

MANDL'S TELEVISION SERVICING—Matthew Mandl—*Macmillan*, 421 p., illus., \$5.50. For radio service men preparing to service television and to serve as a ready reference of common troubles for television workers.

THE MUTUAL SECURITY PROGRAM: For a Strong and Free World—*Mutual Security Agency*, 81 p., illus., paper, free upon request to publisher, Office of Information, 806 Connecticut Ave., N. W., Washington 25, D. C. Describing the workings of NATO, Technical Assistance, and other programs throughout the free world and intended to keep it free.

OPPORTUNITIES FOR THE CONTINUATION OF EDUCATION IN THE ARMED FORCES: Findings and Recommendations of the USAFI Evalu-

ation Study, 1951—W. W. Charters, Director—*American Council on Education*, 72 p., illus., paper, 50 cents. Students in the U. S. Armed Forces Institute range in age from 16 to 57 years and in previous schooling from second grade to the doctor's degree.

PORK PRODUCTION—William W. Smith and L. M. Hutchings—*Macmillan*, 3d ed., 616 p., illus., \$5.50. Practical help for hogmen and students.

PRACTICAL APPLICATIONS OF DEMOCRATIC ADMINISTRATION—Clyde M. Campbell, Ed.—*Harper*, 325 p., \$3.00. The democratic way of life, the author points out, is more difficult to learn than are authoritarian ways. This book is intended to aid teachers and school officials in preparing young people to take their parts in a democracy.

REPORT OF THE COMMITTEE ON A TREATISE ON MARINE ECOLOGY AND PALEOECOLOGY 1950-1951—Harry S. Ladd, Chairman—*National Research Council*, 83 p., paper, \$1.00. It is planned to send the completed treatise to the publisher in 1952.

THE SINGLE WOMAN OF TODAY: Her Problems and Adjustment—M. B. Smith—*Philosophical Library*, 130 p., \$2.75. There are some one and a half million unmarried women in England today. This book discusses their psychological and social problems and has some not too satisfactory suggestions on how they may find happiness.

THE STARS: A New Way to See Them—H. A. Rey—*Houghton Mifflin*, 144 p., illus., \$4.00. With the aid of the star charts in this book, you can really make out the man with the club in the constellation Hercules, the winged horse in Pegasus and so may come to recognize these and other familiar figures in the sky.

THE THEORY OF ISOTOPE SEPARATION AS APPLIED TO THE LARGE-SCALE PRODUCTION OF U<sup>235</sup>—Karl Cohen—*McGraw-Hill*, 165 p., \$2.00. Reports issued by the theoretical division of the SAM laboratories and its antecedents covering work done from 1940 to 1945 plus new material from outside sources.

TRAUMA, GROWTH, AND PERSONALITY—Phyllis Greenacre—*Norton*, 328 p., \$4.50. A series of psychoanalytic studies, all but one previously published in journals, relating to the influence of birth, neonatal and early childhood experiences on personality.

UNDERSTANDING HEREDITY: An Introduction to Genetics—Richard B. Goldschmidt—*Wiley*, see page 207

## The Heavens Are Telling

THE STORY OF THE SKY, BY URANA CLARKE

A treasure house of easy-to-understand information for parents, their inquisitive children, and beginning astronomers. Simply and accurately this profusely illustrated book explains in non-technical terms the great mysteries of the heavens. Enlightening chapters on sun, moon, eclipses, planets, comets, meteors, constellations, time, tide, weather. Brief biographies of early astronomers. Sky charts and directions for a study of the sky every season of the year.

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## AERONAUTICS

# Story Of Plane Crash

► EVERY PLANE should carry instruments in its tail which would tell the whole story of a fatal crash landing.

This was the recommendation of Dr. Edward J. Baldes of the Mayo Clinic and James J. Ryan of the department of mechanical engineering of the University of Minnesota and the Aeronautical Research Laboratories of General Mills, Minneapolis.

"First of all," they said, in considering what to do about reducing deaths in crash landings, "we must be able to reconstruct the events leading up to aircraft destruction. Too frequently there is little or no evidence to separate the human, mechanical and natural factors in the failure."

They spoke at the three-day meeting of the Aero Medical Association in Washington.

Despite possible opposition of pilots who might not agree to a permanent and continuous check on their flight patterns, the two scientists recommended that up to one per cent of the cost of the plane should be spent on such instrumentation. In case of accident, they pointed out, the instruments in the tail could be recovered and would provide data for immediate statistical analysis.

"Suppose the plane in which you are about to fly is destined to crash," the two men said. "What features would you like built into that plane which might increase your chance of survival?"

They listed these points: The forward one-third of the fuselage should be utilized to absorb the energy of an impact crash and the construction should be so strong that the deceleration provided by the impact will be less than humans can tolerate. Parachutes from the tail of the plane might be used to lessen the impact. For forced belly landings, the under portion of the fuselage should have the flexibility to absorb the impact.

Seats, the most important factors inside the plane, should face backward, where the standard seat belt might suffice, or, if

facing forward, they must have specially constructed seat belts and harness and might be connected to vertical supports which are attached as integral members of the tubular structure of the fuselage.

After proper construction has been integrated into a plane, proper fire protection must be provided.

Science News Letter, March 29, 1952

## INVENTION

## More Natural Tasting Frozen Orange Juice

► BETTER TASTING and more "natural" frozen concentrated orange juice results from an invention which received patent number 2,588,337. George Sperti, Cincinnati, is the inventor and he has assigned his patent to the Institutum Divi Thomae Foundation, a non-profit corporation of Cincinnati. The fresh juice, according to the patent, is first concentrated by freezing. The ice is then separated from the concentrate, thawed and evaporated. The soluble solids, including pulp and sugars, are recovered and put back with the concentrate.

Science News Letter, March 29, 1952

## Books of the Week

from page 206

228 p., illus., \$3.75. Intended to serve as a text for students who will not specialize in genetics and also to inform the general reader who wants to know the truth about the strange claims being made in this field.

THE UNITED STATES NATIONAL MUSEUM ANNUAL REPORT FOR THE YEAR ENDED JUNE 30, 1951—*Smithsonian*, 112 p., illus., paper, free upon request to publisher, Washington 25, D. C. Originally, a "national cabinet of curiosities," the museum now houses not only exhibits for the delight of tourists but a reference collection for students—altogether 32,617,298 specimens.

THE UNIVERSE AND DR. EINSTEIN—Lincoln Barnett—*New American Library*, 140 p., illus., paper, 35 cents. An account for laymen of the relativity theory. Originally published by William Sloane Associates.

WHEN DOCTORS ARE PATIENTS—Max Pinner and Benjamin F. Miller, Eds.—*Norton*, 364 p., \$3.95. A series of autobiographical accounts of the battles of physicians with their own illnesses, including, among others, heart disease, cancer, psychosis, multiple sclerosis and old age.

ZOOLOGY IN POSTAGE STAMPS—W. Dennis Way and O. D. Standen—*Philosophical Library*, 113 p., illus., \$5.00. Describing the members of the animal kingdom that have the distinction of being portrayed on postage stamps.

Science News Letter, March 29, 1952

## ● RADIO

Saturday, April 5, 1952, 3:15-3:30 p.m. EST

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Byron T. Shaw, administrator of the Department of Agriculture's Agricultural Research Administration, discusses "Food for Our Future People."

The year 1951 is a *prime number*, divisible only by itself and 1; likewise 5711, the same year according to Hebrew calculations, is a *prime number*.

# ARE YOU LOSING YOUR HEARING?

## Check These Danger Signs It May Save You a World of Trouble and Unhappiness

Do you now have trouble understanding folks whom you used to hear clearly?

Do you hear better where it's noisy than where it's quiet?

Does one ear hear better than the other?

Is it hard to hear the difference between fifteen and fifty—then and ten—and life and knife or other sound-alike words?

Do you keep hearing noises—buzzing, crackling, humming, roaring, etc.?

Do you miss out in general conversation because you must SEE people talking to know what they're saying?

Do you feel a growing suspicion that folks are ridiculing you behind your back?

If you must say "yes" to any of the above, you may already have a serious hearing loss. That's how deafness often comes—creeps up so gradually you may be quite deaf before you realize what is causing all your discomfort and inconvenience.

Why take chances? Get the facts. Write TODAY for informative FREE BOOK—"New Discoveries to Help the Deaf Hear." A 2c postcard will do—but Mail it today.



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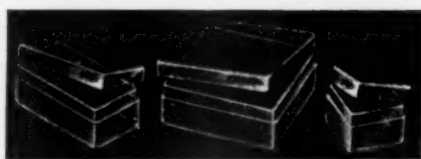
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❁ **FLUORESCENT CHALK**, which can be used to write on any blackboard and is erased in the same manner as ordinary chalk, comes in six colors which glow brightly under ultraviolet light. It is particularly suitable for use where light levels are low.

Science News Letter, March 29, 1952

❁ **CIRCULAR CALCULATOR** gives simultaneous answers to as many as six problems of copy-fitting. Made of smudgeless Vinylite plastic, the device will not warp under normal conditions. It figures machine or hand-set type in terms of time and dollars.

Science News Letter, March 29, 1952

❁ **ATOM MODELS**, which come in a set, can be combined to demonstrate atomic structure of inorganic and organic materials. They can show coordination and covalent bonds. Manufactured to scale, the models are good for classroom demonstrations or for laboratory use.

Science News Letter, March 29, 1952

❁ **OPTICAL-MAGNETIC RECORDING** projector makes possible magnetic sound-on-film for amateur movie makers. In addition to projecting standard 16-mm sound movies, the machine allows home enthusiasts to add music and voices to their own shots after a magnetic sound track has been added to the film by the manufacturer.

Science News Letter, March 29, 1952

## Do You Know?

Fungi, like mushrooms, truffle and morel, are edible delicacies.

The largest frog is the Goliath frog of West Africa; its large thigh bones are highly prized by the natives for use in ceremonial rites.

In ancient Rome, leather was so precious that the wearing of high shoes was restricted by law to patricians, while the poor had to wear primitive sandals or walk barefoot.

Surest way to have white sauce smooth and lump-free is to melt the fat, then blend in the flour thoroughly, add milk slowly, stirring constantly, and keep the heat low until the mixture thickens.

Live births in the United States last year soared above 3,800,000 for the second time in history, and topped the 1950 birth total by more than 200,000.



❁ **PAINT BRUSH** developed especially for high-speed painting of walls has a built-in reservoir which supplies a sci-

tifically designed bristle with enough paint to permit a large area coverage with one dip. The light-weight brush, shown in the photograph, is seven inches wide.

Science News Letter, March 29, 1952

❁ **INDUSTRIAL APRON**, which is chemical-resistant and made of Vinyl with heat-welded seams, may be worn by men and women, wiped clean with damp cloths or sterilized with alcohol.

Science News Letter, March 29, 1952

❁ **AIR FILTER** which removes 99.98% of all measurable particles from the air uses pleated paper as the filtering element. The machine can be of value where completely clean air is required. Available in two sizes, it has capacities of either 500 or 850 cubic feet of air per minute.

Science News Letter, March 29, 1952

❁ **POWER PLANT DEVICE** automatically reports 400 different conditions in the plant and records and prints when and where those conditions occur. It can be applied to airport dispatching, bus terminal control and industrial plants.

Science News Letter, March 29, 1952

Spring is here . . .

## 4 EXPERIMENTAL KITS \$2<sup>00</sup>

TO GIVE YOU A HEAD START

★ **1952 SEEDS**—Salad Bowl lettuce, long-lasting and heat-resisting garden lettuce, Mandarin Chinese cabbage and Celosia Pampas Plume, a new cockscomb—all available this spring for the first time; Dianthus Double Gaiety, new member of the "pink" family . . . these are flowers and vegetables your neighbors won't have.

★ **1951 SEEDS**—Recent flower breeding progress demonstrated by Glitters marigold, top-flight new marigold, and Limelight Marigold, best of its type a decade ago. Two cucumber varieties, one wilt-resistant, show progress in breeding new vegetables.

★ **NUT TREE KIT**—6 specimens of nuts grown in the U. S.—hickory, pecan, almond, filbert, Persian walnut and pistachio. Learn how to grow nuts and what varieties do well in your area.

★ **FERTILIZER KIT**—6 specimens of chemical fertilizers and 2 testing materials to show how fertilizers affect growth.

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